

=> d bib ab 26 34 37 39 40 42 43 49 53 56 60 61 64

L38 ANSWER 26 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1995-044064 [07] WPIDS
DNC C1995-019942
TI New alanine **racemase** from *Tolypocladium niveum* - used in enzymatic synthesis of D-**amino acids**.
DC B05 D16 E19
IN HOFFMANN, K; KLEINKAUF, H; PALMA, N; SANTER, G; SCHNEIDER-SCHERZER, E; SCHROEGENDORFER, K; ZOCHER, R
PA (SANO) SANDOZ PATENT GMBH
CYC 1
PI DE 4314611 A1 19950112 (199507)* 11p
ADT DE 4314611 K1 DE 1993-4314611 19930504
PRAI DE 1993-4314611 19930504
AB DE 4314611 A UPAB: 19960520
Purified alanine **racemase** (I) from *Tolypocladium niveum* is new.
USE - (I) is used for enzymatic synthesis of D-**amino acids**.
ADVANTAGE - (I) has sufficient thermal stability for use as biocatalyst and is able to epimerise most known **amino acids** (with varying degrees of efficiency).
Dwg.0/0

L38 ANSWER 34 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1991-159796 [22] WPIDS
DNC C1991-069067
TI New aspartic acid **racemase** - catalyses racemisation of D- and L-aspartic acids and is obtained from *Streptococcus thermophilus* - based on methionine, glutamic acid, asparagine, phenylalanine, serine, isoleucine, leucine, glycine, threonine, etc..
DC B04 D16
PA (ASAG) ASAHI GLASS CO LTD
CYC 1
PI JP 03094678 A 19910419 (199122)* 5p
JP 2950865 B2 19990920 (199944) 5p
ADT JP 03094678 A JP 1989-231395 19890908; JP 2950865 B2 JP 1989-231395 19890908
FDT JP 2950865 B2 Previous Publ. JP 03094678
PRAI JP 1989-231395 19890908
AB JP 03094678 A UPAB: 19930928
Novel aspartic acid **racemase** (a) catalyses racemic reaction from L-aspartic acid into D- and L-aspartic acid and racemic reaction from D-aspartic acid into L- and D-aspartic acid, (b) acts selectively on aspartic acid racemic reaction and does not act on other **amino acid**, (c) has optimum pH of 8 to 37 deg.C, (d) shows no redn. in activity after 1 hr. treatment at 45 deg.C at pH 6.5-8, (e) shows no redn. in activity by treating at 50 deg.C for 60 mins. at pH 7, (f) has total molecular wt. of about 60000 (gel filtration) and subunit molecular wt. of 28000, and (g) has **amino acid** sequence of Met-Glu-Asn-Phe -Phe-Ser-Ile-Leu -Gly-X-Met-Gly -Thr-Met-Ala-Thr -Glu-Ser-Phe at the terminal.
The **racemase** is obtd. by cultivation of *Streptococcus thermophilus* IAM 10064.
0/0

L38 ANSWER 37 OF 64 WPIIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1990-255666 [34] WPIIDS
DNC C1990-110656
TI Racemisation of aminoacid amide cpds. - by contact with enzyme with
aminoacid amide **racemase** activity from microorganism.
DC B05 D16 E19
IN HERMES, H; PEETERS, W; PETERS, P H
PA (NOVO) NOVO NORDISK AIS; (STAM) STAMICARBON BV
CYC 9
PI EP 383403 A 19900822 (199034)*
R: BE CH DE ES FR GB IT LI NL

ADT EP 383403 A EP 1990-200335 19900214
PRAI EP 1989-200380 19890216; EP 1990-200335 19900214
AB EP 383403 A UPAB: 19930928
Process for complete or partial racemisation of aminoacid amides of
formula R-CH(NH2)-CONH2 (I) is claimed which comprises exposing the cpds.
to an enzyme with aminoacid amide **racemase** activity, which
enzyme is in species of the genus Klebsiella and related genera e.g.
Enterobacter, Escherichia, Shigella, Citrobacter and Salmonella from the
family of the Enterobacteriaceae. (R = indolyl, benzyloxy, lower alkyl
opt. subst. by OH, SH, amino, halogen, phenyl, phenoxy, benzyl or lower
alkylthio, or R = phenyl opt. subst. by one or more of OH, amino,
halogen,
carboxy or lower alkoxy). Pref., the enzyme is derived from Klebsiella
oxytoca strain NCIB 40113, Pseudomonas putida strain ATCC 12633 or NCIB
40042 or Rhodococcus sp. strain NCIB 40041.

USE/ADVANTAGE - Aminoacid amides can be racemised with low losses of
material through by-prod. formation. The prods. can be subjected to
enantioselective enzymatic hydrolysis to prepare optically active
amino acids which can be used as e.g. food and feed
additives. @
0/0

L38 ANSWER 39 OF 64 WPIIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1990-189443 [25] WPIIDS
DNC C1990-082123
TI Racemisation of aminoacid - using **racemase** contg. microbial
cells which are pre-contacted with cell wall digesting enzyme.
DC B05 D16 E19
PA (KEIS) KEISHITSU RYUBUN SHINYOTO
CYC 1
PI JP 02124097 A 19900511 (199025)*
ADT JP 02124097 A JP 1988-276050 19881102
PRAI JP 1988-276050 19881102
AB JP 02124097 A UPAB: 19930928

In racemisation of **amino acid** by using **amino
acid racemase** contg. microbial cells or their
immobilised substance, the cells or their immobilised substance are
preliminary contacted with cell wall digesting enzyme.
Pref. cell wall digesting enzyme is glycosidase, pref. lysozyme or
N-acetylmuramidase. The **amino acid racemase**
contg. microbe is sensitive to glycosidase.

USE/ADVANTAGE - Cell membrane permeability of cells can be increased
under conditions mild enough to maintain activity without damaging
racemase activity. Thus **amino acid** can be
racemised in high yield.
0/0

L38 ANSWER 40 OF 64 WPIIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1990-189437 [25] WPIIDS
DNC C1990-082117
TI Culture of pseudomonas S.P. bacteria - has low substrate specificity and
contains **amino acid racemase** one or more of
L-or DL-glutamic acid.

DC B04 D16
PA (KEIS) KEISHITSU YUBUN SHINYOTO
CYC 1
PI JP 02124087 A 19900511 (199025)*
ADT JP 02124087 A JP 1988-276052 19881102
PRAI JP 1988-276052 19881102
AB JP 02124087 A UPAB: 19930928
In culturing *Pseudomonas* s.p. bacteria which has low substrate
specificity

and contains **amino acid racemase** one or more
kinds of L- or DL-glutamic acid and its salts, L- or DL-aspartic acid or
its salts, L- or DL-alanine, L- or DL-serine, L- or DL-lysine and its
hydrochloride, L- or DL-proline, L- or DL-leucine and L- or DL-arginine,
are used as carbon source.

USE/ADVANTAGE - High content **racemase** retained cells can be
obtd. without inhibiting **racemase** formation in cells,
amino acid can be racemised in high efficiency with
using the cells.

In an example, each 100 ml of medium (polypeptone, meat extract,
NaCl, distilled water 1000 ml) was sterilised. To this, 1 loop of
Pseudomonas putida IF0122996 was inoculated and shaking cultured at 30
deg.C for 15 hours. Then each 1 ml of the culture was inoculated to each
100 ml of medium (K2HPO4, KH2PO4 (NH4)2SO4, MgSO4.7H2O, tryptone (Difco),
yeast extract (Difco), principal C sources, e.g. Na L-glutamate, Na
L-aspartate, L-alanine, L-serine, L-lysine.HCl, L-proline, L-leucine or
L-arginine, distilled H2O 1000 ml, pH 7.0), and spinner cultured at 30
deg.C for 20 hours. Cells were collected from each culture (40 ml) by
centrifugation, washed with 0.1M phosphate buffer, then suspended in the
same buffer and ultrasonicated, centrifuged to obtain crude enzyme
soln..
0/0

L38 ANSWER 42 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1990-152258 [20] WPIDS

DNC C1990-066460

TI Culturing method for **amino acid racemase**
-producing microbe - by keeping nitrogen source concn. in culture medium
at specific concn..

DC B04 B05 D16 E19

PA (KEIS-N) KEISHITSURYUBUN SHI

CYC 1

PI JP 02097377 A 19900409 (199020)*

ADT JP 02097377 A JP 1988-249771 19881005

PRAI JP 1988-249771 19881005

AB JP 02097377 A UPAB: 19930928

Culturing the bacterial strain which belongs to *Pseudomonas* and produces
amino acid racemase (abbr. AAR) and is
characterised by keeping the N source concn. in culture medium in the

range of 0.005-0.02 w/wt as N concn.

Pref. as N source ammonium salts, nitrate, organic cpds. such as
glutamic acid, glutamine, aspartic acid, asparagine, etc. can be used and
for keeping N source concn. they are added continuously or
intermittently.

USE/ADVANTAGE - For synthesising **amino acids**
economically, racemisation process is required and the enzymic
racemisation by AAR is desirable. It has been known that *Pseudomonas*
putida IF012996 can produce AAR and its AAR productivity is very low.
Thus the culturing method for increasing the prodn. of AAR has been
expected and a culturing method has been obtd. using glycerol, ethanol,
lactic acid, citric acid, etc. as carbon source (pat. publ. No.
205781/87). Also keeping N source concn. in culture medium in above

range,
the bacterial body showing high AAR activity can be obtd. @@

L38 ANSWER 43 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
 AN 1990-123561 [16] WPIDS
 CR 1987-300108 [43]
 DNC C1990-054370
 TI *Pseudomonas putida* IFO 12996 aminoacid **racemase** prodn. - using glycerol, ethanol and/or tartaric acid as carbon source, giving increased enzyme prodn. relative to glucose.
 DC B05 D16 E16
 IN ENDO, F; SHIMAZU, M; YUKAWA, H
 PA (REUT-N) RES ASSOC UTIL LIGH
 CYC 1
 PI US 4906572 A 19900306 (199016)*
 ADT US 4906572 A US 1987-21356 19870303
 PRAI JP 1986-44122 19860303
 AB US 4906572 A UPAB: 19930928
 Prodn. of an **amino acid racemase** comprises culturing *pseudomonas putida* IFO 12996 in a culture medium contg. glycerol, EtOH and/or tartaric acid as carbon source, the total concn. of carbon source added to the medium during cultivation being at least 0.5% w/v, and recovering cells contg. the **racemase**.
 USE/ADVANTAGE - Used for racemisation of residual D-amino acids in synthesis of L-amino acids via racemic forms, the *Ps. putida* **racemase** being active on eg. lysine, arginine, methionine, alanine or serine. Prodn. of the **racemase** is increased using the specified carbon sources (c.f. glucose which inhibits enzyme prodn.) making prodn. more favourable industrially.
 0/0

L38 ANSWER 44 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
 AN 1989-055466 [08] WPIDS
 DNC C1989-024484
 TI New acyl aminoacid **racemase** for optically active aminoacid prodn. - from racemic N-acylamino-carboxylic acid in presence of specific amino acylase.
 DC B04 B05 D16 E19
 IN HATANO, K; TAKAHASHI, T
 PA (TAKE) TAKEDA CHEM IND LTD
 CYC 19
 PI EP 304021 A 19890222 (198908)* EN 20p
 R: AT BE CH DE ES FR GB GR IT LI LU NL SE
 HU 47317 T 19890228 (198914)
 DK 8804624 A 19890222 (198920)
 JP 01137973 A 19890530 (198927)
 CN 1035320 A 19890906 (199028)
 US 4981799 A 19910101 (199104) 13p
 EP 304021 B1 19930428 (199317) EN 22p
 R: AT BE CH DE ES FR GB GR IT LI LU NL SE
 DE 3880585 G 19930603 (199323)
 JP 2712331 B2 19980210 (199811) 12p
 KR 9700185 B1 19970106 (199932)
 ADT EP 304021 A EP 1988-113315 19880817; JP 01137973 A JP 1988-180778 19880720; US 4981799 A US 1988-227882 19880803; EP 304021 B1 EP 1988-113315 19880817; DE 3880585 G DE 1988-3880585 19880817, EP 1988-113315 19880817; JP 2712331 B2 JP 1988-180778 19880720; KR 9700185
 B1 KR 1988-10620 19880820
 FDT DE 3880585 G Based on EP 304021; JP 2712331 B2 Previous Publ. JP 01137973
 PRAI JP 1987-208484 19870821; JP 1988-180778 19880720
 AB EP 304021 A UPAB: 19930923
 The new enzyme acylamino acid **racemase** (AAR) converts D-N-acyl -alpha-amino-carboxylic acid (I) to the corresponding L-isomer, and vice versa, but does not convert D-alpha-amino acid to its L-isomer, nor vice versa.
 (I) has formula X-NH-CHR-COOH; X = opt. subst. carboxylic acyl,

best

1-3C alkanoyl or benzoyl opt. substd. by halo, 1-3C alkyl, 1-3C alkoxy and/or NO₂; R = . substd. 1-20C alkyl, esp. 1- unsubstd.; 1-3C substd. by OH, 1-3C alkylthio, SH, phenyl, hydroxyphenyl or indolyl; or 1-4C substd. by NH₂, COOH, guanidino or imidazolyl.
 USE/ADVANTAGE - AAR is used to produce D-or-L-**amino acids** by treatment of DL- (I), in presence of D-or-L- aminoacylase (AA). This process provides 100% conversion of starting material to a specific **amino acid** without sepn. or racemisation steps.
 0/4

L38 ANSWER 53 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
 AN 1988-333485 [47] WPIDS
 DNC C1988-147240

TI New **amino acid** racemate - is derived from Pseudomonas, and used for racemising aromatic **amino acids**.
 DC B05 D16
 PA (SAGA) SAGAMI CHEM RES CENTRE

CYC 1
 PI JP 63245673 A 19881012 (198847)* 11p
 JP 07089928 B2 19951004 (199544) 8p
 ADT JP 63245673 A JP 1987-76290 19870331; JP 07089928 B2 JP 1987-76290 19870331
 FDT JP 07089928 B2 Based on JP 63245673
 PRAI JP 1987-76290 19870331
 AB JP 63245673 A UPAB: 19930923

Amino acid racemase has the following characteristics: (1) Catalyses reaction of generation of racemate from L- or D-**amino acids**. (2) Shows wt. of 60,000-80,000 by SDS-PAGE. HPLC gel filtration and mol. wt. of subunit of 30,000-47,000 by SDS-PAGE. (3) Acts on phenylalanine, tryptophan and tyrosine. Pref. any strain of Pseudomonas with **racemase** activity can be used, but pref. strain is Pseudomonas putida SCRC-744 (FERM P-9039) derived from a soil of Kanagawa prefecture. Relative **racemase** activity to D-**amino acids** is D-glutamine (100%), D-methionine (42%), D-alanine (36%), D-serine (31), D-lysine (22), D-arginine (21%), D-leucine (15%), D-asparagine (6%), D-cysteine (6%), D-histidine (5%), D-phenylalanine (1%), D-tryptophan (0.8%) and D-tyrosine (0.4%). The **racemase** can act on aromatic D-**amino acids**. Optimum pH and temp. are pH 8 and 50-60 deg. C, respectively. USE/ADVANTAGE - The **racemase**, different from known **racemases**, racemises aromatic **amino acids** and does not need ATP as a coenzyme. The **racemase** is new and is derived from Pseudomonas.
 0/5

L38 ANSWER 56 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
 AN 1987-300108 [43] WPIDS
 DNC C1987-127687

TI Aminoacid **racemase** from Pseudomonas - by growing on medium contg. non-sugar carbon source, esp. glycerol.
 DC B05 D16 E19

IN ENDO, F; SHIMAZU, M; YUKAWA, H
 PA (KEIS-N) KEISHITSU-RYUBUN SH; (REAS-N) RES ASSOC UTIL LIGH
 CYC 2
 PI DE 3706724 A 19871022 (198743)* 5p
 JP 62205781 A 19870910 (198743)
 ADT DE 3706724 A DE 1987-3706724 19870302
 PRAI JP 1986-44122 19860303
 AB DE 3706724 A UPAB: 19930922

Pseudomonas microorganisms which produce **amino acid racemase** (I) are grown in a culture medium contg. glycerol, EtOH, tartaric-, fumaric- or succinic-acids as C source, then cells, which

contain large amts of (I), recovered. Pref the C source is glycerol and the total concn of C source added during cultivation is at least 0.5 wt./vol.%. The microorganism is esp *P. putida* IFO 12996. Pref the microorganism is grown at 10-45, (25-40, deg C and pH 3-10, (5-9), under aerated conditions for 4 hr - 3 days. The C source can be added to the starting medium, or added in portions during the incubation. The harvested

cells can be used directly (wet or dry) or they can be lysed and opt. a cell-free, enzyme-contg. extract recovered.

USE/ADVANTAGE - This method provides higher yield of (I) than is possible using glucose as C source. (I) is esp used to racemise residual D-amino acids left after recovery of the h-isomer.

0/0

L38 ANSWER 60 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1987-153956 [22] WPIDS

DNC C1987-064352

TI L-isoleucine prepn. from D or DL alpha butyric acid - in presence of enzyme racemising the acid or a microorganism contg. enzyme.

DC B05 D16 E16

PA (MITP) MITSUBISHI PETROCHEMICAL CO LTD

CYC 1

PI JP 62091191 A 19870425 (198722)* 4p

ADT JP 62091191 A JP 1985-232081 19851017

PRAI JP 1985-232081 19851017

AB JP 62091191 A UPAB: 19930922

D-alpha-aminobutyric acid or DL-alpha-aminobutyric acid is added to a culture medium and a bacterium is cultured in the medium in presence of

an enzyme which racemises D-alpha-aminobutyric acid or a microorganism

contg. the enzyme or treatment of the microorganism.

Pref. L-isoleucine-producing bacteria are *Brevibacterium flavum* MJ-233 (ferm-P 3068) and *Brevibacterium flavum* MJ-233-AB-41 (FERM-P 3812).

They are cultured in a medium (pH 7-8) at 25-35 deg.C for 5 days under aerobic conditions.

The enzyme which can racemise D-alpha-aminobutyric acid is produced by *Pseudomonas putida* (IFO 12996). The enzyme may be added from the first or in course of the culture. After the culture, bacterial cells are removed

and L-isoleucine is purified from the culture medium as usual.

USE/ADVANTAGE - L-isoleucine, one of essential amino acids, has been produced by fermentation using

DL-alpha-aminobutyric acid as precursor, because DL-alpha-aminobutyric acid is easily available. The prod. rate of L-isoleucine from D-alpha-aminobutyric acid. In this method the prodn. rate from D-alpha-aminobutyric acid is increased by adding a racemase in the medium and yield of L-isoleucine is high.

0/0

L38 ANSWER 61 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1986-276390 [42] WPIDS

DNC C1986-119658

TI Gene coding alpha-amino-epsilon-caprolactam racemase - used in conversion of D- or DL- cpd. to L-lysine by recombinant DNA.

DC B04 D16

PA (TORA) TORAY IND INC

CYC 1

PI JP 61202693 A 19860908 (198642)* 9p

ADT JP 61202693 A JP 1985-42739 19850306

PRAI JP 1985-42739 19850306

AB JP 61202693 A UPAB: 19930922

Gene coding alpha-amino-epsilon-caprolactam racemase whose M.W. is 4.5 x 10 power 4 dalton and amino acid sequence of

N-terminal side is: Thr-Lys-Ala-Leu-Tyr-Asp-Arg-Asp-Gly
 -Ala-Ala-Ile-Gly-Arg-Leu-Gly-Lys-Leu -Arg-Phe-Phe-Arg-Leu-Ala-Ile-Ser-Gly
 -Gly-Arg-Gly-Ala-Arg-Leu-Ile-Glu-Glu -Asn-Gly-Arg-Leu-Leu-Ile-Asp-Leu-Ser
 -Gly-Ala 3.5Kb DNA fragment contg. the gene. Recombinant DNA obtd. by
 integrating the DNA fragment is also claimed.

DNA donor is *Achromobacterium obae* having alpha-amino-epsilon-
 caprolactam **racemase** producibility. The DNA fragment is obtd. by
 general method. The recombinant DNA is obtd. by binding the DNA fragment
 with plasmid vector, transforming host with the plasmid, cultivating the
 transformed cell in medium contg. L-alpha-amino-epsilon-caprolactam
 hydrolase and D-alpha-amino-epsilon-caprolactam, selecting transformed
 cell having the **racemase** activity and extracting plasmid. The
 host is lysine-requiring mutant of *E. coli*. Amt. of the hydrolase is
 10-100 unit/ml.

USE/ADVANTAGE - *E. coli* transformed by the recombinant DNA and

having

alpha-amino-epsilon-caprolactam **racemase** producibility can
 convert D- or DL-alpha-amino-epsilon-caprolactam to L-lysine by combined
 use with L-alpha-amino-epsilon-caprolactam hydrolase.
 0/0

L38 ANSWER 64 OF 64 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD

AN 1980-54522C [31] WPIDS

TI Quantitative or qualitative determ. of aminoacid - involves converting
 one optically-active isomer to another using aminoacid-**racemase**
 and oxidn..

DC B05 D16

PA (MATU) MATSUSHITA ELEC IND CO LTD

CYC 1

PI JP 55081595 A 19800619 (198031)*

JP 56043358 B 19811012 (198145)

PRAI JP 1978-155633 19781214

AB JP 55081595 A UPAB: 19930902

The method for analysing, aminoacids quantitatively or qualitatively
 involves converting L-(or D-) aminoacid to D-(or L-) aminoacid with
 aminoacid-**racemase**; oxidising the converted D-(or L-)aminoacid
 with D-(or L-)amino-oxidase; and measuring the change during oxidn. By
 this method specific aminoacid in the substance contg. various aminoacids
 can be selectively analysed.

As amino acid-**racemase** alanine-
racemase, methionine-**racemase**, glutamate-
racemase, proline-**racemase**, lysine-**racemase**,
 threonine-**racemase**, etc. can be used. Aminoacid-**racemase**
 and D-(or L-) aminoacid-oxidase are pref. used in the form of fixed
 enzyme. For the object the change during oxidn. is measured. The
 decrease in oxygen concn. the increase in hydrogen peroxide concn., the
 decrease in redox cpd. (oxidised form) concn. or the increase in redox
 cpd. (reduced form) concn. can be used as the indicator, and they can be
 easily measured electrically or colorimetrically.

=> d his

(FILE 'HOME' ENTERED AT 14:37:26 ON 23 MAR 2001)

FILE 'CA' ENTERED AT 14:37:54 ON 23 MAR 2001

L1 2245 S EPIMERASE OR RACEMASE

L2 450535 S AMINO ACID#

L3 611 S L1 AND L2

L4 89500 S ARTHROBACTER OR PSEUDOMONAS OR RHIZOBIUM OR STREPTOMYCES OR

N

L5 137 S L3 AND L4

L6 11842 S ISOMERASE

L7 13890 S L1 OR L6

L8 2256 S L7 AND L2
 L9 313 S L8 AND L4
 L10 1513 S EPIMERASE
 L11 450535 S AMINO ACID#
 L12 1513 S L10 AND L1
 L13 313 S L10 AND L11
 L14 3788 S D-AMINO ACID#
 L15 4 S L14 AND L10
 L16 5047 S L-AMINO ACID#
 L17 1 S L16 AND L10
 L18 8 S HYDROXYPROLINE EPIMERASE
 L19 3 S "E.C. 5.1.1.8"
 L20 10 S L18 OR L19
 L21 0 S AMINO ACID EPIMERASE

FILE 'BIOSIS' ENTERED AT 15:05:44 ON 23 MAR 2001

L22 0 S AMINO ACID EPIMERASE#
 L23 1236 S EPIMERASE#
 L24 251596 S AMINO ACID
 L25 125371 S AMINO ACIDS
 L26 321771 S L24 OR L25
 L27 173 S L23 AND L26
 L28 1818 S D-AMINO ACID
 L29 2111 S L-AMINO ACID
 L30 87521 S CONVERSION OR INVERSION OR EPIMERIZATION
 L31 12 S L28 AND L29 AND L30

FILE 'USPATFULL' ENTERED AT 15:22:32 ON 23 MAR 2001

L32 1255 S EPIMERIZATION OR EPIMERASE
 L33 72318 S AMINO ACID#
 L34 455 S L32 AND L33
 L35 78 S L32 (P) L33

FILE 'WPIDS' ENTERED AT 15:30:13 ON 23 MAR 2001

L36 183 S EPIMERASE OR RACEMASE
 L37 42642 S AMINO ACID#
 L38 64 S L36 AND L37

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0 ANSWER 5 OF 10 CA COPYRIGHT 2001 ACS

AN 100:47729 CA

TI Hydroxyproline 2-epimerase of Pseudomonas. Subunit structure and active site studies

AU Ramaswamy, Sengoda G.

CS Sch. Med., Univ. Maryland, Baltimore, MD, 21201, USA

SO J. Biol. Chem. (1984), 259(1), 249-54

CODEN: JBCHA3; ISSN: 0021-9258

DT Journal

LA English

AB Hydroxyproline 2-epimerase (I) of P. putida was purified to homogeneity by

an improved procedure. Native I consisted of 2 probably identical subunits. Alkylation of the active site with labeled reagents resulted

in

the loss of 80-85% of the activity, but with the incorporation of only 1 alkyl group even though the active site contains a cysteine residue from each of the 2 subunits. This result suggested that I showed half-of-the-sites reactivity. The labeled enzyme was further subjected

to

exhaustive alkylation with unlabeled iodoacetate, permitting tryptic hydrolysis and isolation of an active site peptide in 30% yield. The specific radioactivity of the peptide was consistent with the 1st result, that only 1 mol of alkyl group was initially incorporated into the active site. The active site peptide (14 residues) was sequenced and found to possess homol. with the clostridial proline racemase.

CC

7-5 (Enzymes)

ST

hydroxyproline epimerase structure Pseudomonas;
subunit structure hydroxyproline epimerase
Pseudomonas; active site hydroxyproline epimerase
sequence

IT

Pseudomonas putida
(hydroxyproline epimerase of, active site and
subunit structure of)

IT

Mercapto group
(in hydroxyproline epimerase active site)

IT

Protein sequences
(of hydroxyproline epimerase active site, of
Pseudomonas putida)

IT

9024-23-1

RL: BIOL (Biological study)
(active site and subunit structure of, of Pseudomonas putida)

IT

52-90-4, biological studies
RL: BIOL (Biological study)
(in hydroxyproline epimerase active site)

L9 ANSWER 76 OF 313 CA COPYRIGHT 2001 ACS
AN 128:191643 CA
TI Racemization of serine with broad substrate specificity **amino acid racemase** immobilized in polyacrylamide gel
AU Seto, Takatoshi; Imanari, Makoto
CS Tsukuba Res. Center, Mitsubishi Chemical Co., Ltd., Ibaraki, 300-03, Japan
SO Nippon Kagaku Kaishi (1997), (11), 784-789
CODEN: NKAKB8; ISSN: 0369-4577
PB Nippon Kagakkai
DT Journal
LA Japanese

AB Racemization of serine is an important reaction in the process of L-tryptophan synthesis from serine and indole. Broad substrate specificity **amino acid racemase** (EC 5.1.1.10) extd. from *Pseudomonas putida* was immobilized in polyacrylamide gel. Velocities of racemization of serine by both the native and immobilized enzymes were measured and analyzed. Two reactions catalyzed by both enzymes followed an equation of Michaelis-Menten type. For the native enzyme Michaelis const. (K_m) of D-serine formation from L-serine was 4.1×10^{-2} M, being K_m of the reverse reaction 1.8×10^{-2} M. Both K_m and max. reaction velocity (V_m) for the forward reaction showed approx. two-fold larger than those for the reverse reaction. In the immobilized enzyme the real K_m s were 1.1-1.4 fold larger than those in the native enzyme, and the apparent K_m increased with increasing a size of gel. V_m s in the immobilized enzyme were 60-70% of those in the native enzyme. Extent of variations of K_m and V_m was almost the same in forward and reverse reactions. By the measurement of the activity of the immobilized enzyme in a flow-reactor within 23 days the activity maintained stably within exptl. errors.

=> d pn 1 76

L35 ANSWER 1 OF 78 USPATFULL
PI US 6204050 20010320

L35 ANSWER 76 OF 78 USPATFULL
PI US 4510246 19850409

DN BA90:20626 CHARACTERIZATION OF THE ISOPENICILLIN N **EPIMERASE**
TI PURIFICATION AND CHARACTERIZATION OF THE ISOPENICILLIN N **EPIMERASE**
FROM NOCARDIA-LACTAMURANS.
AU LAIZ L; LIRAS P; CASTRO J M; MARTIN J F
CS AREA MICROBIOL., DEP. ECOL. GENET. MICROBIOL., FAC. BIOL., UNIV. LEON,
LEON, SPAIN.
SO J GEN MICROBIOL. (1990) 136 (4), 663-672.
CODEN: JGMIAN. ISSN: 0022-1287.
FS BA; OLD
LA English
AB

Har
Isopenicillin N (IPN) **epimerase**, an enzyme involved in cephalosporin and cephamycin biosynthesis that converts IPN into penicillin N, was extracted from *Nocardia lactamurans* and purified 88-fold. The enzyme was unstable but could be partially stabilized by addition of pyridoxol phosphate. The purified enzyme did not require ATP for activity in contrast to other amino acid racemases. The enzyme had an Mr of 59000 as determined by gel filtration; IPN **epimerase** from *Streptomyces clavuligerus* had an Mr of 63000. A protein band of Mr 59000 was found to be enriched in SDS-PAGE of active fractions from *N. lactamurans*. The optimal temperature of the **epimerase** was 25.degree. C and the optimal pH 7.0. The apparent Km for IPN was 270 .mu.M. Fe2+, Cu2+, Hg2+ and Zn2+ strongly inhibited enzyme activity. .alpha.-Aminoadipic acid, valine, glutamine, glycine, aspartic acid and glutathione do not affect enzyme activity, whereas ammonium sulphate was inhibitory. The **epimerase** activity was partially inhibited by several thiol-specific reagents.

L27 ANSWER 152 OF 173 BIOSIS COPYRIGHT 2001 BIOSIS
AN 1990:88185 BIOSIS
DN BA89:47536

TI EXPRESSION OF RECOMBINANT DIAMINOPIMELATE **EPIMERASE** IN
ESCHERICHIA-COLI ISOLATION AND INHIBITION WITH AN IRREVERSIBLE
INHIBITOR.

AU HIGGINS W; TARDIF C; RICHARD C; KRIVANEK M A; CARDIN A
CS MERRELL DOW RES. INST., 16 RUE D'ANKARA, F-67009 STRASBOURG CEDEX, FR.
SO EUR J BIOCHEM. (1989) 186 (1-2), 137-144.
CODEN: EJBBCA. ISSN: 0014-2956.

FS BA; OLD
LA English

AB Recombinant diaminopimelate **epimerase** is overproduced to give 1% of soluble protein when grown under the appropriate conditions in *Escherichia coli*. This compares with 0.02% of the constitutive level of wild-type enzyme. A new purification procedure now yields milligram quantities of homogeneous enzyme of high specific activity (192 U/mg). This has enabled sufficient amounts of enzyme both to compare with wild-type enzyme and to enable active site modification studies to be performed. Incubation of the enzyme with 2-(4-amino-4-carboxybutyl)-2-aziridine-carboxylic acid (AZIDAP), results in time-dependent irreversible

inhibition. Tryptic digestion of the inactivated enzyme and peptide-mapping show that AZIDAP is specifically and covalently bound to the enzyme at a unique peptide. Determination of the amino acid sequence of this peptide and comparison with the sequence deduced from the DNA sequence of the dapF gene shows that Cys73 is labelled. Finally based on limited sequence similarities around this cysteine and active-site cysteines of proline racemase and 1-hydroxyproline 2-**epimerase**, together with mechanistic considerations, we propose that all three non-pyridoxal-phosphate-containing racemases/**epimerases** derive from a common evolutionary origin.

L27 ANSWER 172 OF 173 BIOSIS COPYRIGHT 2001 BIOSIS
AN 1976:110098 BIOSIS
DN BA61:10098